COMMENTS OF THE
CENTER FOR ENVIRONMENTAL ACCOUNTABILITY

Comments on the Petition for Adoption of
New Rule I and Declarations Pertaining to the
Commission's Consideration of the Adverse
Climate Impacts of Greenhouse Gas Emissions.

Notice of Public Hearing
and Opportunity to Comment
Docket 2024.03.028 (March 19, 2024)

SUBMITTED APRIL 12, 2024

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I. Introduction

Earthjustice, on behalf of Montana environmental groups and other entities, recently filed a petition ("Petition"), urging the Montana Public Service Commission ("MPSC" or "Commission") to initiate a rulemaking to require the MPSC to use social cost of carbon ("SCC") calculations in its ratemaking and planning proceedings, along with a grab-bag of other climate related actions.[1] The petitioners purport that a Montana District Court opinion, *Held v. State of Montana*,[2] requires the Commission do so as part of an obligation to carry out the Montana constitution's guarantee of a right to a "clean and healthful environment."[3]

The Petition does not want the Commission to use just *any* SCC value, but urges the Commission to, "at a minimum," use the higher of the figure that either the Environmental Protection Agency ("EPA") or the Interagency Working Group on the Social Cost of Greenhouse Gases ("IWG") has devised and never accept a value below EPA's latest (and largest) number.[4] With this magic number in hand, the petitioners implore the Commission to compare the "short-term costs or direct costs of renewable energy" to the "short-term costs or direct costs of alternatives relying more heavily on fossil fuels."[5] With SCC providing the "costs," the Commission would then determine what utility investments should be deemed "reasonable, just, in the public interest, prudent, or otherwise approvable."[6]

How precisely is the SCC—which estimates the present value of greenhouse gas emissions after accounting for potential global damages resulting from the independent actions of billions of people over the next 276 years—to be used in calculating "short-term" or "direct costs"? Would the calculation apply to the full lifecycle emissions of the generating source or only emissions in Montana? Would the MPSC consider other environmental externalities associated with specific generating sources? How should the MPSC weigh impacts from localized environmental conditions within its control against impacts from global phenomena that bedevil breakout sessions at Davos? The Petition offers no clues.

[1] The petitioners would also have the Commission "Consider any adverse climate impacts of greenhouse gas emissions on communities that are disproportionately impacted by such emissions and/or subject to historical inequalities" and urge the Commission to issue declaratory rulings that acknowledges a duty by the MPSC to consider "harmful climate consequences" when carrying out its responsibilities. Petition at 1, 25–26.
[2] No. CDV-2020-307 (Mont. 1st Jud. Dist. Ct. Aug. 14, 2023).
[3] Mont. Const. art. II, § 3.
[4] Petition at 25–26.
[5] *Id.*
[6] *Id.* at 25.

Even if those difficulties were to be resolved, there would still be several problems with this proposal.

Most fundamentally, the Petition completely misreads *Held. Held* involved a challenge to provisions of the Montana Environmental Protection Act ("MEPA") and explicitly finds that "[t]he PSC is exempted from MEPA as a matter of law."[7] There's nothing for the Commission to follow or obey. It explicitly requires *nothing* of the Commission.

And even if *Held* did apply, the Petition's request would be redundant. The MPSC, in the application of its organic statute, regulations, and individual proceedings already considers environmental effects—including, as appropriate, climate effects—when undertaking its duties. The forum to argue that the MPSC may be falling short in these duties is in the specific proceedings in which petitioners may believe this is occurring—not the Petition's request for a vague and poorly written rulemaking.

Furthermore, the specific SCC metrics that the Petition urges the MPSC to adopt are wrong from top to bottom and in no way represent accurate estimates of "short term" or "direct costs" that can be properly attributed to carbon emissions. EPA's latest SCC estimate of $190 per ton of carbon dioxide emitted in 2020 is far and away the highest ever issued by either the IWG or EPA and, as explained below, is more a testament to the manipulability of the metric and the political motivations of its authors than of any real costs associated with greenhouse gas emissions. Its use in MPSC proceedings would raise the cost of energy on Montanans and offer no prospect of corresponding benefits to Montana rate payers. Increasing the cost of energy in this way would be highly regressive in its economic impact and would, therefore, hurt the disadvantaged populations that the petitioners urge the MPSC to especially consider in its ratemaking. Contrary to the petitioner's assertions, the use of SCC figures would lead to rates that are *not* just and reasonable—in violation of MPSC's statutory obligations.

As explained in detail below, the MPSC should reject the Petition's call to initiate a rulemaking and should instead continue applying Montana law in the specific proceedings before it.

II. Neither *Held*'s Holding Nor its "Findings of Fact" Apply to the MPSC

Held v. State of Montana expressly notes that its holding does not apply to the MPSC. The MPSC can and should, therefore, form its own views with respect to the specific issues that *Held* presents as "findings of fact" insofar as they are relevant to specific MPSC proceedings.

[7] *Held*, at 87.

The litigation in *Held* involves a challenge to provisions of the Montana Environmental Protection Act ("MEPA") that preclude Montana agencies from including in environmental reviews "evaluation of greenhouse gas emissions and corresponding impacts to the climate in the state or beyond the state's border,"[8] and that preclude courts from using any alleged insufficiency of an environmental review with respect to such as a basis to "vacate, void, or delay a lease, permit, license, certificate, authorization, or other entitlement or authority."[9]

Held holds that these MEPA provisions violate the plaintiffs' Montana "constitutional right to a clean and healthful environment, which includes climate as part of the environmental life-support system."[10] Before coming to this conclusion, however, the court acknowledges that "[t]he [M]PSC is exempted from MEPA as a matter of law,"[11] adding in a footnote that, for the remainder of the opinion, "when the Court refers to the Defendants or the State, the [M]PSC is excluded."[12]

That's where the analysis should begin and end. *Held* does not require anything of MPSC. The passages in *Held* that touch on matters that are within MPSC's remit are thus, at most, *dicta*. The court declines to find that there was any "available legal relief" from MPSC that "can effectively alleviate, remedy, or prevent" the harms that the plaintiffs allege flow from the challenged MEPA provisions.[13] Any attempt to nevertheless extend *Held*'s "findings of fact" to the Commission would violate the Montana Constitution, which extends the judicial power only to matters where there exists a "past, present, or threatened injury to a property or civil right" that is "redressable through court action."[14]

Under Montana law, "[s]tanding is a threshold jurisdictional requirement that limits Montana courts to deciding only cases or controversies" so as to "limit the courts to deciding actual, redressable controversy."[15] Such "[c]ase-or-controversy standing derives from … the Montana Constitution" and "must always be met."[16] For a case or controversy to exist, the plaintiffs must

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[8] Mont. Code Ann. § 75-1-201(2)(a).
[9] *Id.* § 75-1-201(6)(a)(ii).
[10] *Held*, at 102.
[11] *Id.* at 87 (citing Mont. Code Ann. § 75-1-201(3)).
[12] *Id.* n.2.
[13] *Larson v. State*, 2019 MT 28, ¶ 46, 394 Mont. 167, 434 P.3d 241 (citation omitted). Indeed, Montana courts lack jurisdiction over defendants from whom no redress can be obtained. The footnote excluding the MPSC from the category of "Defendants or the State" "[h]ereinafter" is prior to the court's findings on redressability. The court should have then dismissed the MPSC from the suit, as "[t]he determination of a party's standing to maintain an action is a question of law subject to contest at any time by a party or sua sponte." *Bullock v. Fox*, 2019 MT 50, ¶ 32.
[14] *350 Mont. v. State*, 2023 MT 87, ¶ 15, 412 Mont. 273, 279, 529 P.3d 847, 852 (quoting *Heffernan v. Missoula City Council*, 2011 MT 91, ¶ 33, 360 Mont. 207, 255 P.3d 80).
[15] *Bullock v. Fox*, 2019 MT 50, ¶ 28, 395 Mont. 35, 48, 435 P.3d 1187, 1194.
[16] *Id.* ¶¶ 30–31.

allege a "past, present, or threatened injury to a property or civil right" that is "redressable through court action."[17] Because the court's exclusion of the MPSC concedes that there was no redressable relief for the plaintiffs to obtain from the MPSC, the MPSC could have been dropped from the case.

It is thus irrelevant that the *Held* court spends scores of pages indulging in "findings of fact," many of which concern issues subject to the MPSC's "full power of supervision, regulation, and control of … public utilities."[18] These include "findings" adopting Mark Jacobson's "scholarship"[19] on the feasibility of electric grids composed almost entirely of "wind, water, and sunlight" ("WWS") as fact without question or caveat.[20] Such "findings of fact" include highly contestable conclusions like the assertion that "[n]on-fossil fuel based energy systems across all sectors … are currently economically feasible and technologically available to employ in Montana."[21] If it is so feasible, it is passings strange that there is no place on earth that has accomplished such a transition. The greatest barriers to achieving this power system nirvana, according to the court's "findings of fact," are "not technical or economic, but social and political."

Channeling Jacobson, the court opines that Montanans would flock to adopt renewable energy systems but for "barriers" to those systems like (and we're not joking, *Held* actually says this) "laws that allow utilization of fossil fuel development." That is . . . not what the word "barrier" means. Such echolalia of a Stanford academic's wild (and wildly inaccurate) energy policy views as "findings of fact" by a court of law illustrate the wisdom of the "case or controversy" requirement in assessing whether a court can exercise jurisdiction. In the absence of a "real controversy," the court is left with "abstract differences of opinion," which may tempt a court into engaging in the sort of ideological extemporizing into which the *Held* court descends.[22]

These claims, including the court's finding that "[w]ind, water, and solar are the cheapest and most efficient form of energy,"[23] are squarely within the MPSC's and not the court's jurisdiction.

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[17] *350 Mont. v. State*, 2023 MT 87, ¶ 15, 412 Mont. 273, 279, 529 P.3d 847, 852 (quoting *Heffernan v. Missoula City Council*, 2011 MT 91, ¶ 33, 360 Mont. 207, 255 P.3d 80).
[18] Mont. Code Ann. § 69-3-102.
[19] This would not be the first time Jacobson has acted to have his scholarship imposed as "fact" through the judiciary. In February, the District of Columbia Court of Appeals resolved *against* Jacobson a years-long legal saga that began when Jacobson filed a defamation suit against an academic journal and academic colleague that had the temerity to criticize his scholarship. Jacobson must now pay his colleague's legal fees. *See Jacobson v. Clack*, 309 A.3d 571, 574 (D.C. 2024).
[20] *Held*, at 80–84.
[21] *Id.* at 81.
[22] *Progressive Direct Ins. Co. v. Stuivenga*, 2012 MT 75, ¶ 17, 364 Mont. 390, 396, 276 P.3d 867, 872.
[23] *Held*, at 82.

Disputes over the prudence of investments in the bulk electric system are properly settled in adversarial rate cases before MPSC. Such cases are "generally very complicated and involve the review and interpretation of testimony given by experts in fields such as engineering and economics."[24] Because of its comparative expertise, the MPSC is properly "the judge of fact" in such matters, whereas, in review, the judiciary "only determines questions of law."[25]

The MPSC is, therefore, the appropriate body to determine questions about the economic and practical advantages and disadvantages of different kinds of energy systems subject to its jurisdiction. It need not defer in any way to the "findings of fact" in *Held* where, at least with respect to the MPSC, the issues were not properly before the court.

III. Montana Law Already Requires MPSC to Consider Environmental Effects and Mitigation of Certain Carbon Emissions

The petitioners present their proposed rule as a means of "ensur[ing] that the Commission exercises its authority in a manner consistent with its constitutional and statutory obligations."[26] But the petitioners fail to point to any instances in which the MPSC has fallen short in its application of its obligations in a manner that their proposal would remediate. Montana law already implements Montana's constitutional protections for the environment in statute and the MPSC executes these provisions through its regulations and in the proceedings before it.

The Montana Constitution provides a "right to a clean and healthful environment" as an "inalienable right[ ]."[27] A separate provision charges the "state" and "each citizen" with the duty to "maintain and improve a clean and healthful environment in Montana for present and future generations" and tasks the "legislature" with the "administration and enforcement of this duty."[28]

With respect to the regulation of the state's public utilities, the Montana legislature has codified that it is the state's policy "to encourage utilities to acquire resources … that will help ensure a clean, healthful, safe, and economically productive environment."[29] The Montana Public Service Commission has, in turn, implemented this policy in its own regulations and requires that a "utility's resource procurement processes shall be guided by [this] policy."[30]

[24] 243 Mont. 492, 496, 795 P.2d 473, 476
[25] *Id.*
[26] Petition at 2.
[27] Mont. Const. art. II, § 3.
[28] *Id.* art. IX, § 1.
[29] Mont. Code Ann. § 69-3-1202.
[30] Mont. Admin. R. 38.5.2024.

With respect to the risks of climate change, Montana has enacted legislation requiring mitigation of carbon emissions for generation assets acquired with the MPSC's prior approval.[31] For natural gas generation, the provision directs the MPSC to "require the applicant to implement cost-effective carbon offsets." For coal generation, the provision prohibits the acquisition of assets built after 2007 "unless the facility or equipment captures and sequesters a minimum of 50% of the carbon dioxide produced by the facility."[32] The MPSC's regulations set out the required contents of applications for its approval of acquisition of assets under this provision.[33] The requirements include "testimony and supporting work papers" showing the utility's "implementation of cost-effective carbon offsets" for gas fired generation or "the capture and sequestration of 50% of the carbon dioxide" associated with coal resources built after 2006. In its orders granting such applications, which have primarily been for natural gas and other assets, the Commission has reviewed whether the applicant has complied in order to ensure compliance with this provision.[34]

As the petitioners themselves point out, other provisions of Montana law allow the MPSC to appropriately consider and account for risks associated with climate change and its effects. Montana law governing utilities' development of integrated resource plans allows utilities to consider "externalities associated with the acquisition of a resource" in developing their plans.[35] The MPSC's regulations require that the utilities' plans include "annual emissions of carbon dioxide" for "existing resources."[36] When assessing future needs, the MPSC requires utilities to consider "a wide range of plausibly cost-effective resources" and include in their descriptions of these possibilities their "environmental impacts including … emissions." When considering the system-wide costs of new resources and retirements, the utilities' assessments of options must include "a broad range of … risks related to uncertainty about future loads, resource costs and performance, and changes in public policy." This assessment must also include "at least two scenarios that rely on increased renewable energy resources." These provisions allow for the MPSC's measured consideration of environmental risks and effects.

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[31] Mont. Code Ann. § 69-8-421.
[32] *Id.* § 69-8-421(6)(e), (8).
[33] Mont. Admin. R. 38.5.8228.
[34] *See, e.g.*, *In the Matter of Nw. Energy's Application for Approval of Capacity Res.*, No. 2021.02.022, 2021 WL 3542798 (July 26, 2021) (Explaining application "adequately described the resource attributes" and "provided a cost-effective carbon offset proposal . . ."); *In Re Nw. Energy*, No. 6943A, 2009 WL 2877287 (May 19, 2009) (explaining that §69-8-421(6)(e) requires utility "to implement cost-effective carbon offsets" and approving plan in which utility will "identify qualified carbon offset providers and seek [M]PSC approval of specific carbon offset projects.").
[35] Mont. Code Ann. § 69-3-1204(3)(b).
[36] Mont. Admin. R. 38.5.2022(1)(d).

The Commission's rules and procedures amply apply Montana's constitutional protections, allowing it to, in the appropriate contexts, consider risks associated with climate change. The rule that the petitioners would have the MPSC adopt is, therefore, redundant in this respect. The MPSC is already implementing the Montana Constitution's protections for the environment.

IV. The Proffered "Social Cost of Greenhouse Gases" is a Fatally Flawed Metric

The social costs of greenhouse gases ("SC-GHG")—synecdochically called the SCC—is a modeled future welfare cost of the global climate change impacts caused by emitting a metric ton of carbon dioxide[37] in a given year discounted to establish a present value.

As this section explains, there are several problems with the SCC that undermine its usefulness for the MPSC.

A. There is no remotely accurate social cost of carbon.

In 2009, the Obama administration established the IWG to develop estimates of the SCC to ensure "that the estimates agencies use when monetizing the value of changes in greenhouse gas emissions resulting from regulations and other relevant agency actions continue to reflect the best available science and methodologies."[38]

While the models used and the particulars of calculations have varied, SCC estimation can generally be divided into four components or modules: socioeconomic, climate, damages, and discounting.[39] The socioeconomic module is used to predict emissions. These emissions predictions are then used by the climate module to project future temperatures and other physical aspects of climate change (e.g. sea level rise, global greenhouse gas concentrations). The damage module or damage function translates predicted physical changes into monetized estimates of net economic damage. Finally, the discounting module translates these damages into the amount of money the individuals experiencing the climate change impacts would be willing to pay to avoid them.

[37] The global warming potential of other greenhouse gases to convert emissions of these gases into units of carbon dioxide equivalent.
[38] Interagency Working Grp. On Social Cost of Greenhouse Gases, Technical Support Document, Social Cost of Carbon, Methane, and Nitrous Oxide (Feb. 2021), https://perma.cc/XBQ9-K3QB.
[39] EPA, Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances (Nov. 2023), https://perma.cc/5M3R-YACH.

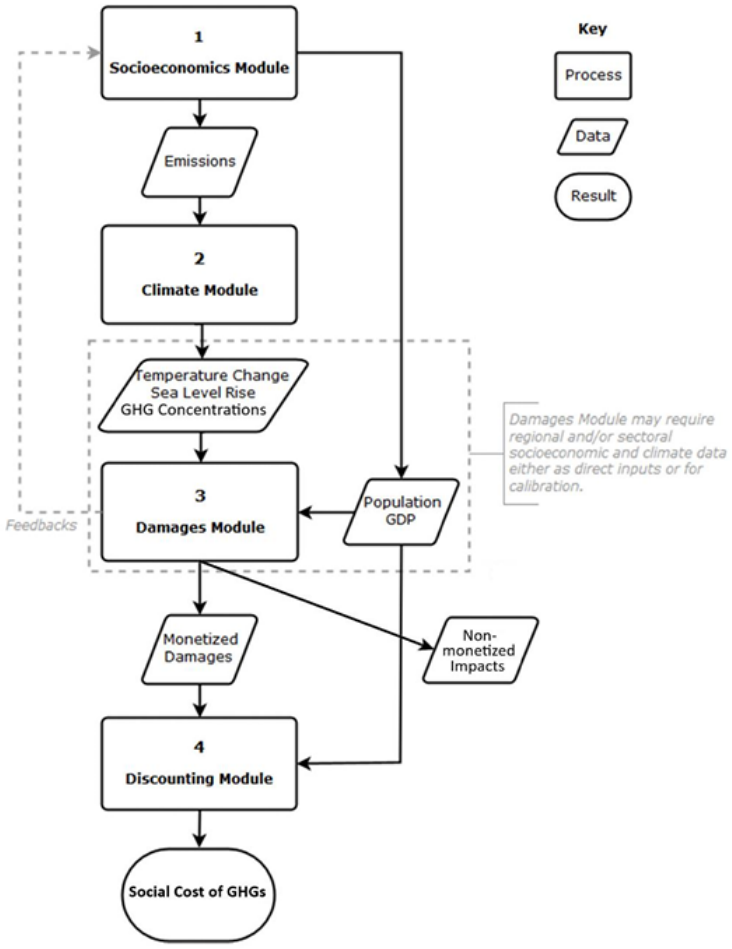

Figure 1: The Four Components of SC-GHG[40]

The use of these models conveys the impression that scientists know significantly more about the consequences of climate change the effects of emitting discrete amounts of carbon dioxide on those effects than they really do. The use of nested models, each made up of dozens of equations, themselves representing an effectively infinite number of independent variables, gives a veneer of scientific legitimacy that masks the uncertainty underlying each of the many inputs to the system. But this appearance of rigor masks what is in effect just a black box. The SCC model takes in assumptions about emissions (which amount to assumptions about the future behavior of billions of people, many yet unborn), temperature rise, damages, and discount rates, and throws out a single number. And because each of these components is grounded in "science," the resulting number is supposed to be taken seriously and without question.

[40] *Id.* at 21.

But the huge range of calculated SCC values puts the lie to these claims. Richard Tol, an Economist with the University of Sussex, observed that "published estimates [of the SCC] range from [negative $]771 [per ton of carbon dioxide] to [positive $]216,035 [per ton of carbon dioxide]. Research cannot reduce the span of credible estimates by much, as the future is uncertain and ethical parameters are key."[41] The IWG and EPA's estimates themselves have varied tremendously. In 2010, IWG issued an estimate of $26 per ton of carbon dioxide emitted in 2020. It updated those estimates in 2016 to $42, and then updated them again at the beginning of the Biden administration to $51. Unsatisfied with these estimates, EPA constructed its own SCC model, and in November of 2023 issued an estimated SCC of a whopping $190 per metric ton of CO2 emitted in 2020.[42]

While political biases explain the upward trend in these numbers (despite declining predictions of emissions), eliminating political motivation would not by itself fix the flaws in the SCC models. John Pezzey of the Australian National University has explained that the models used to calculate a SCC "will always be disputed," and points in particular to the inherent unreliability of two modules: the damage module and the discounting module.[43]

B. Damage functions are inherently unreliable, and EPA's chosen damage functions are wrong.

The damage function is a particularly unreliable component of the SCC because, as Pezzey explains, the "statistical analyses" that undergird damage functions necessarily "rest[ ] on untestable, far-out-of-sample extrapolation."[44]

> Estimating the damage to welfare from more heatwaves or hurricanes in 2050 or 2100 caused by an extra tonne of CO_2 emitted now is so unfathomable because normal scientific methods [ ] cannot apply. First, there are no adequate comparators for testing damage functions at the necessary scale; second, there are no agreed, quantitatively stable laws underlying damage modeling; and third, slow Earth-system response times greatly limit climate damage learning (how much any damage observed decades from now can improve a damage function for likely warming in the century after that).[45]

[41] Richard Tol (@RichardTol), Twitter (Feb. 22, 2021, 2:12 AM), https://perma.cc/3BYS-983D.
[42] EPA, Report on the Social Cost of Greenhouse Gases, *supra* note 39.
[43] John C. V. Pezzey, *Why the Social Cost of Carbon Will Always Be Disputed*, 10 WIREs Climate Change, art. no. e558 (Nov. 12, 2018), https://doi.org/10.1002/wcc.558.
[44] *Id.*
[45] *Id.*

Testing extended climate projections is generally harder than testing predictions in other earth sciences, given both the climate's immense complexity, and the unprecedented degree of temperature rise predicted by many climate scientists.[46] While stable underlying laws make climate modeling based on past observations meaningful, those observations do not contain data with modes and rates of change equivalent to those predicted.[47]

This problem becomes more complicated when predictions move from climate science to social science. Pezzey explains that:

> The Earth system including people, each with complex brains, is vastly harder to model than the system without humanity that pure climate science models. Though important progress has been made in analyzing complex system dynamics … such analysis falls far short of any consensus about the nature, or even existence, of quantitatively stable laws for humanity's responses to unprecedented, centennial climate change.

Isaac Asimov's classic sci-fi novel, *Foundation*, imagines a future where future human activity can be mathematically predicted through a statical modeling technique called "psychohistory." Needless to say, no such technique exists. The biggest impact on global carbon emissions over the last two decades have been the COVID-19 pandemic and the 2008 financial crisis, neither of which one could find in EPA's modelling.

Thus, as Pezzey explains, the "claim that statistical and structural modeling of local or sectoral damage from short-run warming or other geophysical changes can be used to predict global damage from similar changes sustained globally over decades in the far future, cannot be directly tested on any useful timescale."[48] There are simply no viable comparators for testing any damage function that might be chosen. "For this reason alone, deep disputes among climate economists … about damage functions will remain unresolved for decades, maybe forever."[49]

The particular damage functions chosen in EPA's 2023 SCC estimates are not just speculative, but provably wrong because they rely on an outdated, factually incorrect emissions scenario called RCP8.5. While sometimes labeled as a "business as usual scenario," RCP8.5 is now

[46] *Id.*
[47] *Id.*
[48] *Id.*
[49] *Id.*

widely regarded as implausibly extreme.[50] While the latest projections of the International Energy Agency expect a median warming of around 2.4°C by 2100, RCP8.5 projects a temperature rise of around 5°C.[51]

When it began to update its SCC methodology, EPA acknowledged the weakness of models that depended on RCP8.5, and excised it from its own emissions projections:

> based on a review of long-run projections for socioeconomic variables and GHG emissions necessary for damage calculations, the socioeconomic and emissions projections recently developed under the Resources for the Future Social Cost of Carbon Initiative … stand out as being most consistent with the National Academies' recommendations.[52]

As shown in Figure 2 below, the Resources for the Future predictions (the black line) are far, far less than those of RCP8.5 (most closely approximated by the orange line, representing the somewhat different SSP5-8.5). RCP8.5 is so unlike all other projections of emissions that EPA felt the need to explain that SSP5-8.5 is the "only SSP-RCP pairing with CO2 emissions projections outside the 1st to 99th percentile range of RFF-SPs." [53] In other words, it is the only scenario EPA considers that it considers to be essentially impossible.

[50] Roger Pielke Jr., *The Biden Administration Abandons RCP8.*5, The Honest Broker (Feb. 17, 2023), https://perma.cc/7TFD-MD3T.
[51] In'l Energy Agency, *World Energy Outlook 2023*, at 22 (2023), https://www.iea.org/reports/world-energy-outlook-2023/executive-summary; Zeke Hausfather & Glen P. Peters, Comment, *Emissions—The "Business As Usual" Story Is Misleading*, 577 Nature 618, 618 (2020); Zeke Hausfather, *Explainer: The High-Emissions 'RCP8.5' Global Warming Scenario*, CarbonBrief (Aug. 21, 2019), https://www.carbonbrief.org/explainer-the-high-emissions-rcp8-5-global-warming-scenario/.
[52] EPA, External Review Draft of Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances (Sept. 2022), https://www.epa.gov/system/files/documents/2022-11/epa_scghg_report_draft_0.pdf
[53] *Id.*

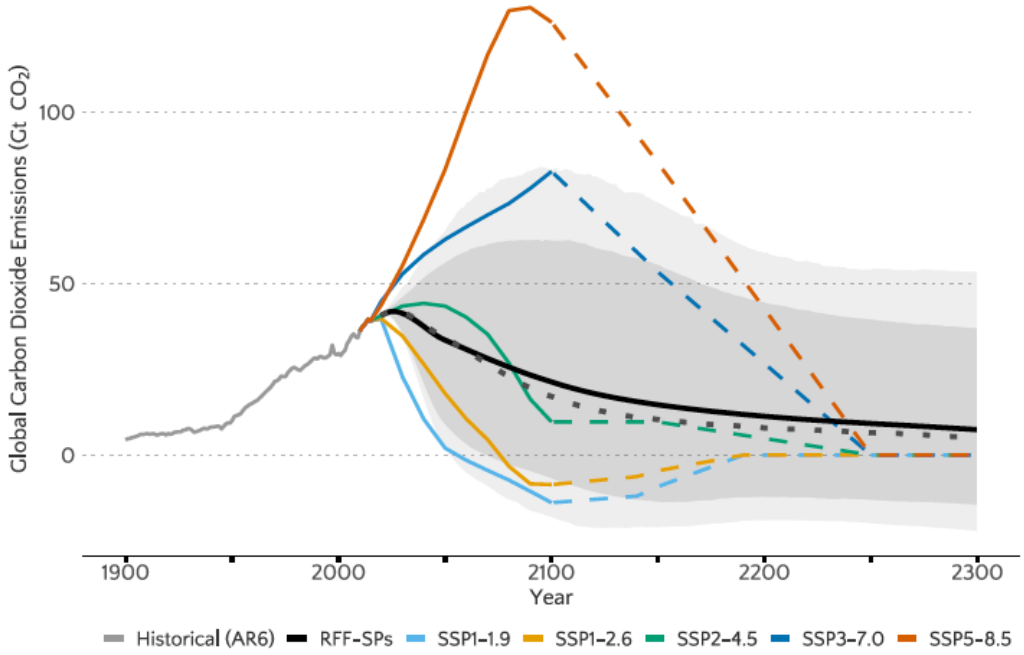

Figure 2: Net Annual Global Emissions of Carbon Dioxide (CO2) under RFF-SPs and SSPs, 1900-2300.[54]

But EPA did not *completely* remove RCP8.5 from its SCC estimation. Instead, while effectively disavowing the scenario in its emissions projections, EPA maintains RCP8.5 in its three damage functions: the Data-driven Spatial Climate Impact Model (DSCIM) developed by the Climate Impact Lab; the Greenhouse Gas Impact Value Estimator (GIVE) model developed under Resources for the Future's Social Cost of Carbon Initiative; and the global damage function estimation based on Howard and Sterner.[55]

DSCIM depends on RCP8.5. The damage functions (health, energy, labor productivity, agriculture, coastal regions) calculated using DSCIM, use aggregated points from RCP4.5 and 8.5 to estimate damage functions "such that a greater range of [global mean surface temperature] and [global mean sea level] are supported."[56] For example, As shown in Figure 3 below, the resulting damage functions for mortality incorporate projected changes in global average surface temperature of 10°C above 2001–2010 levels by 2100, a value that isn't remotely plausible.

[54] EPA, External Review Draft, *supra* note 52, at 25.
[55] EPA, Report on the Social Cost of Greenhouse Gases, *supra* note 39, at 47.
[56] Climate Impact Lab, Documentation for Data-driven Spatial Impact Model (DSCIM) Version 092023-EPA, at 22 (Sept. 2023), https://perma.cc/EA6F-MJCY.

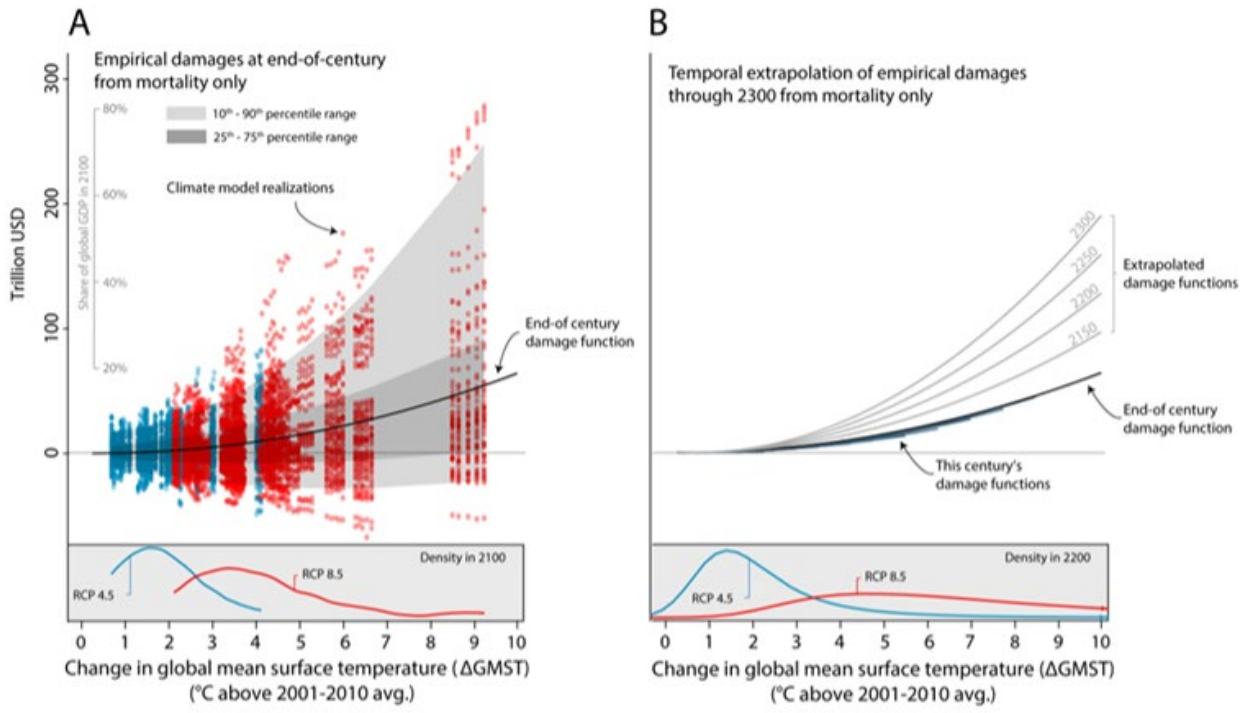

Figure 3: DSCIM empirically derived mortality-only damage functions.

As Roger Pielke explains:

> If you squint carefully at the figures above and ignore the red dots representing SSP3-8.5 you'll see that there is essentially no damage out to about 2 degrees C, which equates to ~3C above preindustrial values. The world is currently on track to see warming of less than 2.5C. **More than 75% of the DSCIM SCC results from mortality due to extreme heat, driven by RCP8.5**.[57]

Similar results hold for the other DSCIM damage functions. For example, DSCIM's labor estimate is also based on RCP8.5 and with RCP8.5 removed, the resulting damages are "just about zero." *Id.*

GIVE depends on RCP8.5. EPA's GIVE model uses a damage function that is itself a combination of estimates from a variety of studies, each of which uses RCP8.5.[58] Sea level rise in the GIVE model relies on a 2016 study using RCP8.5.[59] Building energy expenditures in the GIVE

[57] Roger Pielke Jr., *Secret Sauce*, The Honest Broker (Dec. 4, 2023), https://perma.cc/RCK2-MCNR (emphasis added).
[58] Kevin Rennert et al., *Comprehensive Evidence Implies a Higher Social Cost of CO_2*, 610 Nature 687 (2022), https://www.nature.com/articles/s41586-022-05224-9.
[59] Delavane B. Diaz, *Estimating Global Damages from Sea Level Rise with the Coastal Impact and Adaptation Model*, 137 Climatic Change 143 (2016), https://doi.org/10.1007/s10584-016-1675-4.

model rely on a 2018 study using RCP8.5.[60] Agricultural damages in the GIVE model rely on another 2018 study usingRCP8.5.[61]

If RCP8.5 is eliminated from the GIVE model, the value of damages falls approximately 50 percent.[62] The remaining 50 percent of damages come from flawed assumptions on the effects of temperature change on mortality.[63] If both are eliminated, the GIVE model projection of damages is approximately zero.

The meta-analysis of Howard and Sterner depends on RCP8.5.[64] The Howard and Sterner damage function used by EPA is constructed as a meta-analysis of papers published 2015 or earlier.[65] While many of these studies pre-date RCP8.5 (first published in 2011), they often rely on RCP8.5's extreme antecedents.[66]

The authors highlight the influence of extreme projections on their estimated damages:

> When we exclude high-temperature estimates (i.e., >4°C) … we find evidence of initial benefits from climate change. …When we include high-temperature estimates (>4°C), we find … no initial benefits from climate change and a flatter damage function. … [W]e also find that the inclusion of the sole high-temperature estimate … significantly impacts the final coefficients and the corresponding SCC estimate. Together, these results again highlight the sensitivity of the temperature-damage relationship to high-temperature damage estimates.[67]

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[60] Leon Clarke et al., *Effects of Long-term Climate Change on Global Building Energy Expenditures*, 72 Energy Econ. 667 (2018), https://doi.org/10.1016/j.eneco.2018.01.003.
[61] Frances C. Moore, *New Science of Climate Change Impacts on Agriculture Implies Higher Social Cost of Carbon*, 8 Nature Commc'ns, art. no. 1607 (2017), https://doi.org/10.1038/s41467-017-01792-x.
[62] Pielke Jr., *Secret Sauce*, *supra* note 57.
[63] *Id.*
[64] In addition to RCP8.5, Howard and Sterner relies on a 2015 *Nature* article by Marshall Burke. Marshall Burke et al, *Global Non-linear Effect of Temperature on Economic Production*, 527 Nature 235 (2015), https://doi.org/10.1038/nature15725. Recent analysis by David Barker exposes the GDP correlation method used in that study as "shallow and misleading" because the authors "cherrypick" and "use data with characteristics that are known to create spurious regression results." David Barker, *Global Non-linear Effect of Temperature on Economic Production: Comment on Burke, Hsiang, and Miguel*, 21 Econ. J. Watch, Mar. 2024, at 35, 35–36, https://econjwatch.org/File%20download/1297/BarkerMar2024.pdf. Others have made similar methodological criticisms. *Id.* at 36–37 (discussing Richard G. Newell et al., *The GDP-Temperature Relationship: Implications for Climate Change Damages*, 108 J. Env't Econ. & Mgmt., July 2021, art. no. 102445, https://doi.org/10.1016/j.jeem.2021.102445; Richard A. Rosen, Letter, *Temperature Impact on GDP Growth Is Overestimated*, 116 PNAS 16170 (2019), https://doi.org/10.1073/pnas.1908081116; Richard S.J. Tol, *A Social Cost of Carbon for (Almost) Every Country*, 83 Energy Econ. 555 (2019), https://doi.org/10.1016/j.eneco.2019.07.006).
[65] Peter H. Howard & Thomas Sterner, *Few and Not So Far Between: A Meta-analysis of Climate Damage Estimates*, 68 Env't Res. Econ. 197 (2017), https://doi.org/10.1007/s10640-017-0166-z.
[66] Pielke Jr., *Secret Sauce*, *supra* note 57.
[67] Pielke Jr., *Secret Sauce*, *supra* note 57.

This reliance on RCP8.5 feeds into EPA's own calculations. As shown in Figure 4 below, approximately 50 percent of EPA's damages are based on projected temperature changes of between 3–8°C by 2300.[68] Because damage functions with these extreme emissions scenarios are non-linear, a random sampling of projected temperatures from distribution in Figure 4 will be disproportionately influenced by the assumptions of extreme temperatures, even if the midpoint at 2100 (approximately 2°C) appears reasonable.[69]

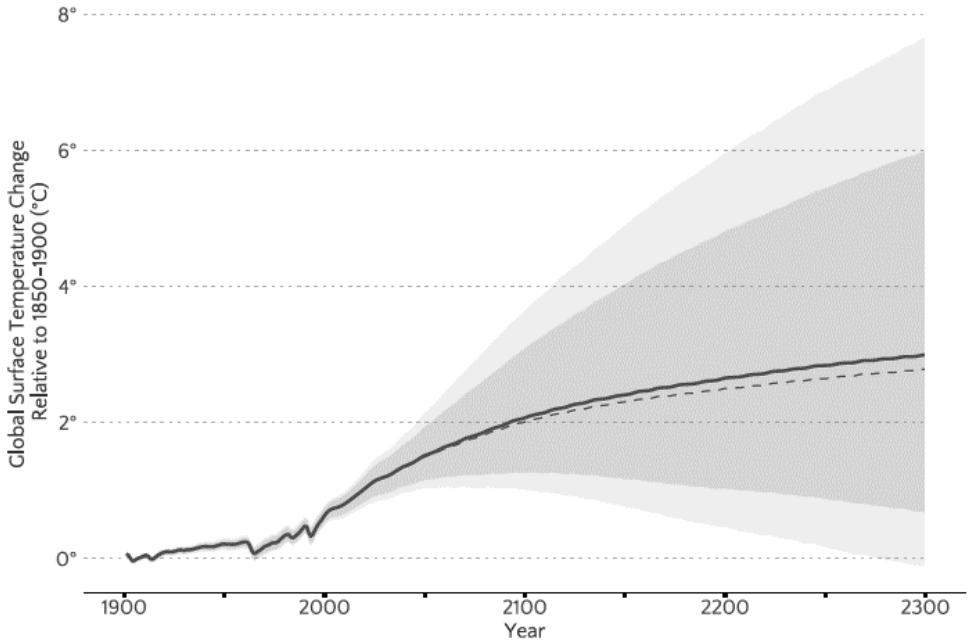

Figure 4: Global Mean Surface Temperature Change, 1900–2300.[70]

As Roger Pielke explains, "RCP8.5 does the heavy lifting" in EPA's damage module.[71] That's the secret sauce. "Sneaky. Uncool. Not science."[72]

C. The discount rate is highly manipulable, and EPA's chosen rate is wrong.

Another variable with an outsized impact on the final SCC estimate is the discount rate used in the discount module. A Ramsey discount rate is used to determine how much future costs and benefits can most appropriately be compared to present ones. Because money today is worth more than the same amount in the future, any future costs must be discounted to determine their present value. The discount rate is calculated as the sum of the pure rate of time preference (how

[68] *Id.*
[69] *Id.*
[70] EPA, Report on the Social Cost of Greenhouse Gases, *supra* note 39.
[71] Pielke Jr., *Secret Sauce*, *supra* note 57.
[72] *Id.*

much one prefers to have something now rather than later) with the product of the elasticity of marginal utility of consumption (how much well-being changes relative to changes in consumption levels) and the expected growth rate of consumption.

While many of the assumptions which go into the SCC are positive statements about the future world, like the expected rate of growth, the pure rate of time preference is necessarily normative.[73] It requires determining how to compare the value of the quality of future lives with the value of present lives, a moral judgment that economists have shown varies tremendously from region to region and across social classes. Jinchi Dong et al. explain that, "[r]easonable people can reasonably disagree about the social welfare function (indeed … they cannot agree). An individual's ethical views are partly idiosyncratic and partly cultural. Norms about time and risk have been found to systematically vary between countries."[74]

Because they were to be used in calculating low-risk-but-not-risk-free projects to reduce greenhouse gas emissions, the SCCs calculated during both the Obama and Trump administration used discount rates between 3 and 7 percent: 3 percent was the central value in the Obama Administration and the lower bound used during the Trump Administration. But in its new estimate of the SCC, the Biden Administration has applied a much lower discount rate, using 2 percent rather than 3 percent as the central case.

While these are small percentage changes, they have an outsized impact on results. EPA's 2023 SCC estimates show that a shift from a 2.5 percent to a 1.5 percent discount rate nearly triples the SCC from $120 to $340 per metric ton of carbon dioxide emitted in 2020.

There are two reasons to be skeptical of the EPA's most recently chosen discount rate.

First, as Dong et al. explain, "The ethical values assumed by experts systematically deviate from the world population so that published estimates of the social cost of carbon are unrepresentative and too high."[75]

> Averaged over [181] experts, the social cost of carbon is $34.8 [per ton of carbon dioxide]. Averaged over the countries, the social cost of carbon is much lower, $15.4 [per ton of carbon dioxide]. It is higher, however, than the population-weighted average, $12.2 [per ton of carbon dioxide]. This is because more populous nations tend to be more impatient. If we use average preferences, the social cost of carbon falls further, to $9.3 [per ton of carbon

[73] Jinchi Dong et al., *Towards a Representative Social Cost of Carbon*, arxiv.org (Apr. 7, 2024), https://arxiv.org/pdf/2404.04989.pdf
[74] *Id.*
[75] *Id.*

> dioxide] because the social cost of carbon increases disproportionally with decreasing time and risk preferences.[76]

As Figure 5 below shows, this result is heavily influenced by the variations in global pure rates of time preference. Because the most financially vulnerable almost always express higher pure rates of time preference, the EPA's chosen discount rate of 2 percent is most likely to harm those with lower incomes. A lower rate reflects the preferences of the more affluent.

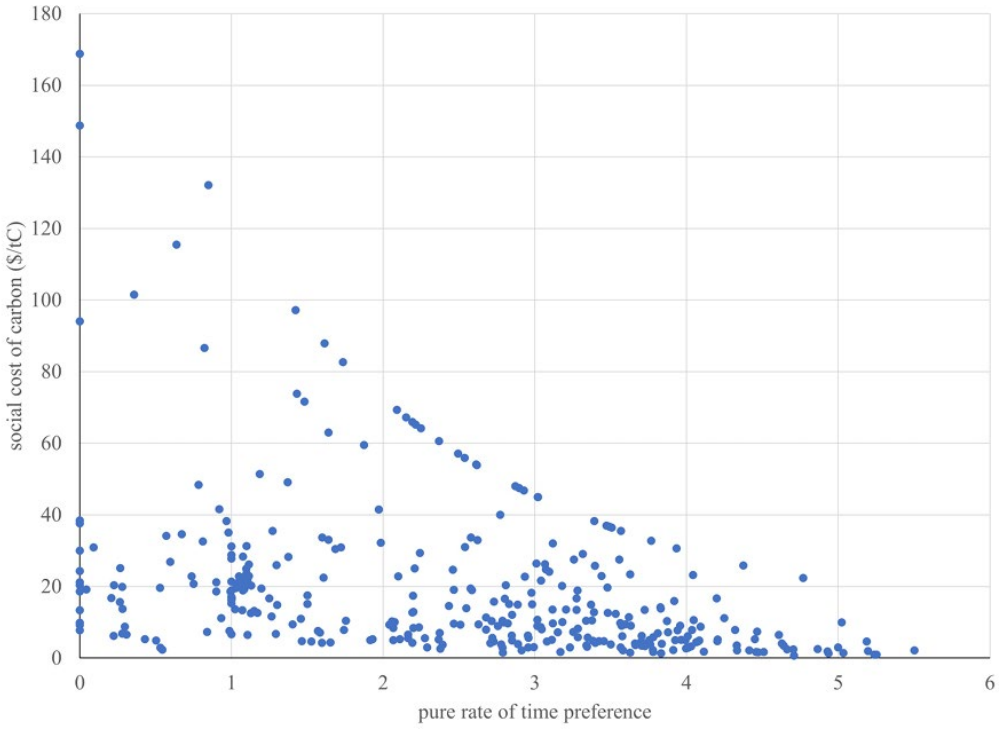

Figure 5: The social cost of carbon plotted against the calibrated pure rate of time preference.[77]

Second, the EPA's choice of discount rate strongly suggests that the choice was political.

During the period EPA was developing its SCC estimates, it was also developing several extremely costly rules. For example, on March 20, 2024, EPA finalized its new tailpipe emissions rules for light-and-medium-duty vehicles for model years 2027 to 2032.[78] These regulations are the most aggressive automotive standards EPA has ever set and will require 69% of new vehicles to be battery electric vehicles or plug-in hybrids by 2032.[79] To accomplish this transformation,

[76] *Id.*
[77] *Id.*
[78] EPA, RIN 2060-AV49, *Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles* (Mar. 20, 2024), https://www.epa.gov/system/files/documents/2024-03/lmdv-veh-standrds-ghg-emission-frm-2024-03.pdf.
[79] *Id.*

EPA estimates that the final rule will result in $870 billion in increased vehicle costs to consumers, along with hundreds of billions of dollars in charging infrastructure costs, and lost time for refueling.

To offset these costs, EPA had to discover benefits that would justify them. The primary benefit EPA identified was $1.6 trillion in climate benefits—more than quadrupling the $0.36 trillion in estimated benefits in the proposed rule—as a result of its new November 2023 estimate of $190 per ton SCC value. This was a convenient, though not unexpected result. During a Brookings Institution forum on the SCC in April 2023, *New York Times* reporter Coral Davenport mused about how the EPA could best justify its upcoming rules:

> The Biden administration is preparing, in the next couple of weeks, to propose what I think will be the most aggressive standard the US has ever seen on US auto emissions. It will be designed to essentially end sales of the internal combustion engine in our lifetime. …[T]hat is a transformation of a cornerstone of the US economy as we have known it for the last century. How do you economically justify that? One way you do that is you come in with the social cost of carbon at $192 per ton. If you can justify, if you can say this rulemaking that will phase out the internal combustion engine and force automakers to change everything they've done, force all of us to buy EVs—almost whether or not we want to—if you say the cost of every ton of carbon dioxide that comes out of that tailpipe is $192—hurts us all $192—boom, you basically have your economic justification for this powerful rulemaking.[80]

Ms. Davenport was prescient. EPA's unrounded 2020 SCC was $193.[81]

With the SCC, the EPA has developed a tool to justify its own further development of greater regulatory control. Put another way, the EPA is "printing its own regulatory currency by raising the SCC."[82] That the number reflects politics more than science should be obvious.

D. The petitioner's proposal is self-evidently focused on politics and not accuracy.

The methodological flaws identified in the EPA and IWG's SCC calculations show that it is impossible to use the SCC to represent the costs of current carbon emissions. But the framing of the Proposal suggests that this isn't its intent.

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[80] *Social Cost of Carbon*, Brookings Inst. (Apr. 3, 2023), https://www.brookings.edu/events/social-cost-of-carbon-what-it-is-why-it-matters-and-why-the-biden-administration-seeks-to-raise-it/.
[81] EPA, Report on the Social Cost of Greenhouse Gases, *supra* note 39, at 154.
[82] *See* Travis Fisher, *The Political Economy of EPA's Updated Social Cost of Carbon*, Cato Inst. (Feb. 28, 2024), https://www.cato.org/blog/political-economy-epas-updated-social-cost-carbon.

The Proposal asks that the Commission "at a minimum"(!):

> Apply the higher of the social cost of greenhouse gases established by (a) the U.S. Environmental Protection Agency or (b) the federal Interagency Working Group on the Social Cost of Greenhouse Gases as of the time of the Commission's determination (except that in no case shall the costs of greenhouse gases be lower than those at a 2-percent near-term Ramsey discount rate from the U.S. Environmental Protection Agency's November 2023 "Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances," adjusted for inflation).

Notice at 1–2.

Should the methodological flaws with the IWG and EPA's calculation of the SCC ever be resolved so that it could be developed in a non-political way, future estimates might improve upon the current estimates so that the SCC could be of legitimate use in MPSC proceedings. But Petitioners wish to prohibit a change to a lower number. They propose that "in no case shall the costs of greenhouse gases be lower than those at a 2-percent near-term Ramsey discount rate from the" EPA's November 2023 SCC . Instead, it would fix in Montana regulations a ratchet, whereby estimates of SCC could only go up and never go down, no matter what the science says.

The only explanation for this language is that petitioner's wish to pursue a particular outcome rather than employ credible scientific metrics.

V. It is Impractical to Build a Grid With Only "Renewable Energy Generation"

The proffered purpose of the Petition is for the Commission to adopt EPA's new SCC estimates to help it better determine the costs and benefits of transitioning Montana utilities away from conventional generation and towards "renewable energy generation." But, this isn't a real option for the Commission.

As this section explains, wind and solar are not panaceas that eliminates all greenhouse gas emissions. And there is simply no way for electric utilities to rely primarily on "renewable energy generation" that is still "reasonable, just, prudent, in the public interest, or otherwise approvable."

A. "Renewable energy generation" does not mean zero emissions.

The premise of the SCC is that the global costs of climate change can be reduced through a reduction in *net* greenhouse gas emissions. Because climate change is the result of the gradual accumulation of carbon dioxide in the upper atmosphere, the relevant metric for emissions is not

only the emissions produced during the process of generating electricity, but those produced throughout the *full lifecycle* of the source.

The Petition sets up a sharp dichotomy between "fossil fuel" and "renewable energy" generation sources. But there are many different electrical generation systems, and every system—including renewable energy systems—produces greenhouse gases in varying quantities through fuel production, construction, operation, and decommissioning. For conventional fossil-fueled generation, like coal fired power plants, the majority of greenhouse gas emissions are produced during operation. For other systems, like wind and nuclear, most emissions are released during construction and decommissioning. And for some systems, like biomass, the emissions released during combustion are offset by the carbon sequestered while the fuel grows. All of these emissions—whether generated during operation, construction, deconstruction, or fuel production—impact global greenhouse gas concentrations in the same way and so excluding emissions from one or more stages is irrational. If the Commission is to take account of greenhouse gas emissions from generation sources in its ratemaking decisions, it must account for emissions across the full lifecycle of each system while normalizing emissions on a per kilowatt-hour basis. This would provide the fairest comparison of emissions from generation systems and the best indication of the systems' ultimate climate impact.

Quantifying lifecycle emissions from a system type is difficult, however, as there are many variations from plant to plant even within a single generation system. But some generalizations can be made. The National Renewable Energy Laboratory ("NREL")'s Life Cycle Assessment Harmonization Project provides reasonable emissions factors from different generation systems, derived from a review of approximately 3,000 published lifecycle assessment studies.[83] The studies include analysis of utility-scale electricity generation from wind, solar photovoltaics, concentrating solar power, biopower, geothermal, ocean energy, hydropower, nuclear, natural gas, and coal technologies, as well as the carbon-footprint for storage technologies—lithium-ion battery, pumped storage hydropower, and hydrogen storage technologies—which although not capable of generating electricity themselves, are necessary to make use of intermittent generation technologies like solar and wind and high penetrations.[84] The median emission factors in grams of carbon dioxide equivalent per kilowatt-hour (g CO_2e/kWh) is documented in Figure 6 below.[85]

[83] NREL, Life Cycle Greenhouse Gas Emissions from Electricity Generation: Update (Sept. 2021), https://perma.cc/59P8-SDYG.
[84] *Id.*
[85] *Id.*

Table 1. Median Published Life Cycle Emissions Factors for Electricity Generation Technologies, by Life Cycle Phase

	Generation Technology	One-Time Upstream	Ongoing Combustion	Ongoing Non Combustion	One-Time Downstream	Total Life Cycle	Sources
Renewable	Biomass	NR	—	NR	NR	52	EPRI 2013 Renewable Electricity Futures Study 2012
	Photovoltaic[a]	~28	—	~10	~5	43	Kim et al. 2012 Hsu et al. 2012 NREL 2012
	Concentrating Solar Power[b]	20	—	10	0.53	28	Burkhardt et al. 2012
	Geothermal	15	—	6.9	0.12	37	Eberle et al. 2017
	Hydropower	6.2	—	1.9	0.004	21	DOE 2016
	Ocean	NR	—	NR	NR	8	IPCC 2011
	Wind[c]	12	—	0.74	0.34	13	DOE 2015
Storage	Pumped-storage hydropower	3.0	—	1.8	0.07	7.4	DOE 2016
	Lithium-ion battery	32	—	NR	3.4	33	Nicholson et al. 2021
	Hydrogen fuel cell	27	—	2.5	1.9	38	Khan et al. 2005
Nonrenewable	Nuclear[d]	2.0	—	12	0.7	13	Warner and Heath 2012
	Natural gas	0.8	389	71	0.02	486	O'Donoughue et al. 2013
	Oil	NR	NR	NR	NR	840	IPCC 2011
	Coal	<5	1010	10	<5	1001	Whitaker et al. 2012

Figure 6: Median Published Life Cycle Emissions Factors for Electricity Generation Technologies.[86]

Notably, although renewable technologies like wind and nuclear have the lowest greenhouse gas emissions factors, even they are not "zero emissions" sources, as emissions are generated in the construction and decommissioning stages.

B. There cannot not be sufficient "renewable energy generation" built in any reasonable time frame.

In 2022, 42 percent of Montana's in-state electricity generation came from coal, 38 percent from hydropower, 15 percent from wind, 2 percent from natural gas, 2 percent from petroleum, and

[86] *Id.*

less than 1 percent from solar.[87] To replace fossil fuels with renewable energy, all of the coal, natural gas, and petroleum would need to be replaced by hydropower, wind, or solar sources.

It won't be hydropower. Just four hydropower generation sources have been built in Montana since 1990: Flint Creek Hydro, Rainbow Hydro, Turbull Hydro, and Tiber Dam Hydro. They have a cumulative nameplate capacity of just 86 MW.[88]

Nor is the development of sufficient additional wind and solar likely to occur in the near future. Wind and solar construction throughout the U.S. have frequently been stymied by objections over land use. Wind turbines require approximately three times more land than solar panels and one hundred times more land than natural gas or nuclear generation.[89]

As a result, wind and solar construction has frequently been rejected by local residents who would prefer to keep that land for something else. The plan to build America's largest solar farm in Nevada was scrapped because it would deface the top of a local mesa.[90] The town of Swanton, Vermont, voted 731 to 160 to reject a seven-turbine wind project that would have disrupted a skyline view.[91] As of January 2024, more than 600 wind and solar projects have been rejected across the United States.[92]

Building sufficient battery storage—necessary if intermittent sources like wind and solar will make up the majority of Montana's grid—is also likely to be difficult, if not impossible. The battery energy storage facility located at Moss Landing in California is currently the largest in operation in the country, with 750 MW. New York would need to build a new Moss Landing every 7 months to stay on track to meet its 2040 goals. And these facilities would need to compete for battery resources with electric vehicles—which also face material shortages over the same time span.[93]

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[87] *Montana State Profile and Energy Estimates*, Energy Info. Admin., https://www.eia.gov/state/analysis.php?sid=MT (last visited Apr. 12, 2024).
[88] Mont. Dep't of Env't Quality, *Renewable Energy*, https://deq.mt.gov/energy/Programs/renewable (last visited Apr. 12, 2024); George Plaven, *Turning on the Juice: Flint Creek Dam*, Mont. Standard (Sept. 5, 2011), https://mtstandard.com/news/local/turning-on-the-juice-flint-creek-dam/article_ca8b6f7a-d779-11e0-ad5b-001cc4c002e0.html.
[89] John van Zalk & Paul Behrens, *The Spatial Extent of Renewable and Non-renewable Power Generation*, 123 Energy Pol'y 83, 86–87 (2018), https://doi.org/10.1016/j.enpol.2018.08.023.
[90] Gabriella Angeleti, *Plans Scrapped for Solar Project that would Disrupt Michael Heizer's Double Negative*, Art Newspaper (July 26, 2021), https://perma.cc/YNK2-3MBC.
[91] Robert Bryce, *The Windmills of Bernie's Mind*, Wall St. J. (Feb. 7, 2016), https://www.wsj.com/articles/the-windmills-of-bernies-mind-1454880639.
[92] *Renewable Rejection Database*, Robert Bryce, https://perma.cc/GS8K-JSR6 (accessed Jan. 26, 2024).
[93] *See, e.g.*, Joe McDonald, *Threatened by Shortages, Electric Car Makers Race for Supplies of Lithium for Batteries*, AP News (June 27, 2023), https://perma.cc/6RNB-JXLN.

Even if these new generation facilities can be built, they will also require the building of new high voltage transmission lines to connect them to the rest of the grid. If anything, these transmission projects are even harder to locate than the generation facilities themselves, as residents risk losing forests and agricultural land for projects that service a distant city. One recent example is the rejection of the $1 billion New England Clean Energy Connect by an overwhelming 59 percent of voters in Maine, which hamstrung Massachusetts's renewable "importation" plans.[94]

C. A grid with a high fraction of "renewable energy generation" will not be reliable.

A grid with a high fraction of intermittent energy generation systems will also have serious reliability problems. Wind energy generates on average about 35 percent of its total nameplate capacity and solar less than 25 percent. And because reduced generation for wind and solar is largely dependent on the weather, this lack of capacity isn't randomly distributed, but tends to be correlated, like when the sun goes down or when a major weather event disrupts wind or solar production.

When power supply drops but demand does not, other generation sources must fill the gap. If those sources are unable to perform, grid outages are possible. That's why regions with increased penetrations of wind and solar have faced increasing concerns about grid reliability. The North American Electric Reliability Corporation ("NERC")'s Long-Term Risk Assessment for 2023–2027 found that most of the country is at elevated risk of blackouts, with the Midwest and California having a high-risk of adequacy shortfall during even normal peak conditions.[95]

The reliability issues projected in New York help to explain why. In its 2023–2032 Comprehensive Reliability Plan, NYISO says that there are "growing risks to electric system reliability, including: projected increases in peak demand due to electrification of the transportation and building sectors; additional generator deactivations; delayed implementation of planned infrastructure projects; and extreme weather."[96] The reliability plan notes that long term risk could be increased by "climate, economic, regulatory, and policy drivers," i.e. increased emphasis on renewable energy.[97]

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[94] David Iaconangelo, *$1B Transmission Smack Down May Upend Northeast Renewables,* E&E News (Nov. 12, 2021), https://subscriber.politicopro.com/article/eenews/2021/11/12/1b-transmission-smack-down-may-upend-northeast-renewables-282991.
[95] NERC, *2022 Long-Term Reliability Assessment* (Dec. 2022), https://perma.cc/T8AJ-V6B7.
[96] Press Release, NYISO, NYISO Issues Comprehensive Reliability Plan Detailing Reliability Risks Over the Next Decade (Nov. 29, 2023), https://perma.cc/7END-MQ7F.
[97] NYISO, 2023–2032 Comprehensive Reliability Plan 6, 48 (Nov. 28, 2023), https://perma.cc/G2RD-8F9S.

The report notes that "[t]here is a clear upward trend forecasted in peak demand over the next ten years, with significant uncertainty driven by electrification of heating and transportation coupled with the development of multiple high-electric demand facilities (e.g., microchip fabrication and data centers). As the demand on the grid grows at a rate greater than the build out of generation and transmission, deficiencies could arise within the ten-year planning horizon."[98] This imbalance in supply and demand wouldn't buck the trend. The report explains that in recent years, "[t]he pace of generation retirements has exceeded the pace of resource additions to date" and "[s]hould this trend continue, reliability needs will be identified both locationally and statewide."[99]

The risks of inadequate grid capacity and reliability lead to an additional risk of over-reliance on intermittent resources: sustainability. Author Robert Bryce explains that there is an Iron Law of Electricity: "People, businesses, and countries will do whatever they have to do to get the electricity they need."[100] Because an all solar and wind grid cannot deliver this, it cannot be sustained.

VI. The Use of the Social Cost of Carbon in MPSC Ratemaking and Planning Would Not Result in Just and Reasonable Rates

The Petition would require the MPSC to use the Social Cost of Carbon to evaluate whether "costs and actions pertaining to electric and gas utilities are reasonable, just, in the public interest, prudent, or otherwise approvable, the Commission."[101] Given the significant methodological flaws, identified above, with the SCC, such an approach would result in rates that are not just and reasonable. The supposed benefits that the SCC would suggest that Montanans should receive would be illusory. Montanans would be paying for benefits that they would not receive. On its own terms, the SCC aggregates global damages, so mitigation of emissions in Montana would not result in benefits in Montana equal to that of the social cost of carbon. Montana's captive ratepayers would pay for benefits that others would receive.

An inflated carbon price "inflates … present-day market value" of non-carbon emitting resources.[102] In the context of rate-regulated utilities, this allows utilities to rate base and earn re-

[98] *Id.* at 9–10, 48, 86.
[99] *Id.*
[100] Robert Bryce, *Coal At $200 A Ton And Soaring Use Of Oil For Power Proves 'The Iron Law Of Electricity'*, Forbes (Oct. 8, 2021), https://perma.cc/HE9C-W8DR.
[101] Petition at 25.
[102] *In the Matter of the Application of Nw. Energy for Hydro Assets Purchase*, No. 7323K, 2014 WL 7721606, at *46 (Sept. 26, 2014) (Comm'r Kavulla, dissenting).

turns on inflated asset valuations. In exercising its ratemaking function, the MPSC must "determine whether [rates] are reasonable to both the consumer, and the utility."[103] Allowing a utility to inflate the value of certain kinds of assets using the SCC as an adder would be unreasonable to consumers, as the metric itself is unreasonable.

Montana law forbids the use of "a bonus or adder in the cost of a new resource" as "compensation for costs such as environmental externalities" except "to compensate for a real and actual cost required by existing regulation or existing law."104 Though not part of their proposed rule, the Petition argues that the MPSC could consider "avoided environmental and societal costs of climate change from fossil fuel resources . . . 'real and actual cost[s].'"105 Though not clearly stated, the implication is that the Social Cost of Carbon would be the measure of "real and actual costs." Given the methodological flaws with the SCC, SCC calculations—which include predictions of global harms of a period of hundreds of years—could in no way serve as a measure of such costs.

The SCC's illusory benefits would send Montana ratepayers through the looking glass. The promised future benefits would give them "jam to-morrow and jam yesterday – but never jam today."[106]

The cost to ratepayers of a move towards a renewables-only grid would be extraordinary. Policy analysts have looked at other states, such as Colorado, with aggressive renewable energy goals. In Colorado, Governor Jared Polis's goal of a one hundred percent renewable grid could cost the state $318.8 billion by 2050.[107] Montana does not have the population of Colorado, but that gives a sense of the scale of potential costs of pursuing a renewables-only strategy.

Such costs, premised on a flawed SCC, would not be just and reasonable and would be at odds with the purpose of Montana's resource planning requirements—"meet[ing] … customers' needs for adequate, reliable, and efficient energy services at the lowest long-term total cost …."[108]

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[103] *Mont.-Dakota Utils. Co. v. Mont. Dep't of Pub. Serv. Reg.*, 243 Mont. 492, 498, 795 P.2d 473, 477 (1990).
[104] Mont. Code Ann. § 69-3-1204.
[105] Petition at 20.
[106] "'It must come sometimes to 'jam to-day,' Alice objected. 'No, it can't,' said the Queen. 'It's jam every *other* day: to-day isn't any *other* day, you know.'" Lewis Carroll, THROUGH THE LOOKING GLASS AND WHAT ALICE FOUND THERE 94 (MacMillan and Co.) (1871).
[107] Jake Fogleman, *Colorado's Energy Future: The Hight Cost of 100% Renewable Electricity by 2040*, Part 1 of 3 (May 2023), https://files.americanexperiment.org/wp-content/uploads/2023/10/Colorados-Energy-Future-Part-1.pdf.
[108] Mont. Admin. R. 38.5.2020(2).

VII. Conclusion

The Petition urges the MPSC to incorporate a methodologically flawed and politically inflected social cost of carbon into its ratemaking and planning procedures. The Petition's attempt to justify their proposal on the basis of a Montana district court opinion that, by its own terms, does not apply to the MPSC. The MPSC is already following Montana constitutional and statutory protections for the environment and should spare Montanans the significant costs to affordability and reliability that the Petition would entail.

For these reasons, the Center for Environmental Accountability urges the MPSC to reject the Petition for Rulemaking.

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